The CHAZOP shall be conducted after:

- The associated process has undergone a SIL study (where applicable).
- HAZOP have been completed.
- The associated control system functional specifications are complete.

4. Standards and Statutory Requirements

4.1 General

Unless noted otherwise, the publications as shown below form part of this Design Criteria. Each publication shall be the latest revision and/or addendum in effect of issue of this job specification unless indicated otherwise.

All applicable codes and standards are to be approved by a third party.

The following precedence shall be applied to design standards:

- Laws and regulations of local authorities and governmental bodies of New Caledonia.
- French Laws and regulations.
- European regulation and directives.
- This specification or Drawings
- Other Standard Project documents.
- Vendor Standards.

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4.2 Codes and Standards

All instrument and control, associated electrical components and materials shall comply in design, manufacture, testing and performance, with the current issue of all relevant French and local standards, French and local codes, French and local regulations and French and local directives having jurisdiction over plant manufacture, installation and operation in New Caledonia. Any deviation should be review and approved by HT prior to start any work.

The following table lists the minimum relevant mandatory codes:

Authority Name & Relevant Codes	Descriptions
AFNOR	Association française de normalisation
NF C 15-100	Low–voltage electrical installations
NF EN 61131-2	Programmable Controllers – Equipment requirements and test
C12-101	Statutory regulations for the protection of workers in premises which make use of electric currents.
C12-330	Statutory regulations for the protection of workers in mines and quarries which make use of electric currents.
NF X 44 052	Installations classées pour la protection de l'environnement.
X 43 310	Qualité de l'air - Émissions de sources fixes – Évaluation des caractéristiques des chaînes automatiques de mesurage du dioxyde de souffre sur site.
X 43-300	Qualité de l'air - Émissions de sources fixes – Échantillonnage de gaz en continu par méthode extractive.
X 43-301	Qualité de l'air - Émissions de sources fixes – Détermination d'un indice relatif aux composés organiques en phase gazeuse – Méthode par ionisation de flamme.

Authority Name & Relevant Codes	Descriptions
IEC	International Electrotechnical Commission
IEC 60079	Electrical apparatus for explosive gas atmosphere
IEC 60204 – 1	Safety of Machinery
IEC 60331	Fire resisting characteristics of electric cables
IEC 60332	Test on electric cables under fire condition
IEC 60364	Electrical installation of buildings
IEC 60529	Degree of protection provided by enclosures (IP code)
IEC 60848	Preparation of Function charts for Control Systems
IEC 60050-351	International electrotechnical vocabulary. Chapter 351.Automatic control
IEC 61000	Electromagnetic compatibility
IEC 61000-6-2	Electromagnetic compatibility - Part 6-2: Generic standards - Immunity for industrial environments
IEC 61000-6-4	Electromagnetic compatibility - Part 6-4: Generic standards - Emission standard for industrial environments
IEC 61010	Safety requirements for electrical equipment for measurement, Control and laboratory use.
IEC 62305	Protection Against Lightning
IEC 61285	Industrial process control – Safety of analyser houses
IEC 61508	Functional safety : safety of electrical/electronic/programmable electronic safety related systems
IEC 60617	Graphic symbols for diagrams
IEC 60751	Industrial platinum resistance thermometer sensors
IEC 60584	Thermocouples
IEC 61131	Programmable controllers
IEC 60848	Grafcet Specification
CENELEC	Comité Européen de Normalisation Electronique
ATEX 94/9/EC	The directive for devices and protection system designated for use in area subject to explosion hazard
EN50014	Electrical apparatus for potentially explosive atmospheres - General requirements
EN50016	Electrical apparatus for potentially explosive atmospheres - Pressurized apparatus "p"
EN50018	Electrical apparatus for potentially explosive atmospheres - Flameproof enclosure "d"
EN50019	Electrical apparatus for potentially explosive atmospheres - Increased safety "e"
EN50020	Electrical apparatus for potentially explosive atmospheres - Intrinsic safety "i"
EN50021	Specification for electrical apparatus with type of protection "n"
EN50028	Electrical apparatus for potentially explosive atmospheres - Encapsulation "m"

4.3 International Standards Recommendations

International codes and standards may be used, provided that all equipment supplied conforms to the current issue of the relevant New Caledonian codes and standards.

Authority Name & Relevant Codes	Description
ISO	International Standards Organisation
ISO 5167	Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 1: general principles and requirements
ISO 7194	Measurement of fluid flow in closed conduits. Velocity-area methods of flow measurement in swirling or asymmetric flow conditions in circular ducts by means of current-meters or pitot static tubes.
ISO 6817	Measurement of conductive liquid flow in closed conduits -- Method using electromagnetic flowmeters
ISO 13849	Safety of machinery - Safety-related parts of control systems - Part 2 : validation
ISO 5048	Continuous mechanical handling equipment - Belt conveyors with carrying idlers - Calculation of operating power and tensile forces

Authority Name & Relevant Codes	Description
AFNOR	Association Française de Normalisation
NF C32	Insulated cables and flexible cords for ins tallations.
NF A91-701	Surface treatment. Identification of workshop tanks, piping and equipment. Safety marking.
NF EN 50091	Uninterruptible power systems (UPS)
NF EN 50262	Metric cable glands for electrical installations
NF EN 50394-1	Electrical apparatus for potentially explosive atmospheres - Group I - Intrinsically safe systems - Part 1: construction and testing
NF EN 60204	Safety of machinery - Electrical equipment of machines - Part 1 : general requirements
NF EN 60751	Industrial platinum resistance thermometer sensors.
NF EN 61000-6	Electromagnetic compatibility (EMC).
NF EN 50281-1 (IEC 61241 (Part 0)	Electrical apparatus for use in the presence of combustible dust - Part 1-1: electrical apparatus protected by enclosures - Construction, testing, selection, installation and maintenance.
NF EN 61241	Electrical apparatus for use in the presence of combustible dust - Part 1: protection by enclosures "tD"
NF EN 61666	Industrial systems, installations and equipment and industrial products. Identification of terminals within a system.
NF EN 62262	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK codes)
NF M87-202	Petroleum industry. Instrumentation cables. Specifications.
NF EN 50112	Measurement, control, regulation. Electrical temperature sensors. Metal protecting tubes for tc assemblies.
NF EN 50113	Measurement, control, regulation. Electrical temperature sensors. Isolating tubes for thermocouples.
NF EN 60793	Optical fibres - Part 1-1 : measurement methods and test procedures - General and guidance
NF EN 60794	Optical fibre cables - Part 1-1 : generic specification - General
NF EN 61935 (Part 1)	Generic cabling systems - Specification for the testing of balanced communication cabling in accordance with EN 50173 - Part 1 : installed cabling
NF EN 60244 (Part 1)	Methods of measurement for radio transmitters - Part 1 : general characteristics for broadcast transmitters
NF EN 50173 (Part 1)	Information technology - Generic cabling systems - Part 1 : general requirements and office areas
NF EN 50174 (Parts 1, 2, 3)	Information technology - Cabling installation - Part 1 : specification and quality assurance
NF EN 50346	Information technology - Cabling installation - Testing of installed cabling
NF EN 60966 (Part 2)	Radio-frequency cables - Part 2 : sectional specification for semi-rigid radio-frequency and coaxial cables with polytetrafluoroethylene (PTFE) insulation
NF EN 61152	Dimensions of metal-sheathed thermometer elements.
NF EN 60654 (Parts 1, 3, 4)	Operating conditions for industrial-process measurement and control equipment.
NF EN 61298 (Part 1)	Process measurement and control devices. General methods and procedures for evaluating performance.
NF C46-101	Industrial-process measurement and control. Analogue D.C. current signals.
NF EN 61115	Expression of performance of sample handling systems for process analyzers.
NF EN 61207 (Part 1)	Expression of performance of gas analyzers.
NF EN 60770 (Part 1)	Transmitters for use in industrial-process control systems.
NF EN 60534 (Parts 2-1, 2-5, 5)	Industrial-process control valves.
NF EN 61158 (Part 2)	Digital data communication for measurement and control - Fieldbus for use in industrial control systems
NF EN 61069 (Part 1)	Industrial-process measurement and control. Evaluation of system properties for the purpose of system assessment.
NF ISO 8573 (Part 1)	Compressed air - Part 1 : contaminants and purity classes

Authority Name & Relevant Codes	Description
NF EN 298	Automatic gas burner control systems for gas burners and gas burning appliances with or without fans
IEC 7731 / NF EN ISO 7731	Ergonomics danger signals for public and works areas – Auditory danger signals.
NF EN 842	Safety of machinery. Visual danger signals. General requirements, design and testing.
NF M61-002 ~~and -003~~	Nuclear energy. Sealed radioactive sources. General and classification.
NF ISO 9978	Radiation protection, sealed radioactive sources, leakage test methods
NF EN 61511 (Parts 1, 2, 3)	Functional safety - Safety instrumented systems for the process industry sector - Part 1 : framework, definitions, system, hardware and software requirements
NF EN 60447	Basic and safety principles for man-machine interface, marking and identification - Actuating principles
NF EN 61496	Safety of machinery
NF H 95-103	Code de sécurité des transporteurs à courroie - Exemples de protecteurs aux ponts d'enroulement
NF EN 741	Continuous handling equipment and systems. Safety requirements for systems and their components for pneumatic handling of bulk materials.
NF EN 618	Continuous handling equipment and systems. Safety and EMC requirements for equipment mechanical handling of bulk materials except fixed belt conveyors.
NF EN 619	Continuous handling equipment and systems. Safety and EMC requirements for equipment mechanical handling of unit loads.
NF EN 620	Continuous handling equipment and systems. Safety and EMC requirements for fixed belt conveyors for bulk material.
IEC	International Electrotechnical Commission
IEC 60050 - 121	International Electrotechnical Vocabulary - Electromagnetism
IEC 60050 - 131	International Electrotechnical Vocabulary - Circuit Theory
IEC 60050 - 141	International Electrotechnical Vocabulary - Polyphase systems and circuits
IEC 60050 - 151	International Electrotechnical Vocabulary - Electrical and magnetic devices
IEC 60027	Letter symbols for use in electrical technology.
IEC 60617-DB-12M	Graphical symbols for diagrams.
IEC 60757-Ed. 1.0	Code for designation of colours
IEC 61557 (part 1)	Electrical safety in low voltage distribution systems up to 1 kV A.C. and 1.5 kV D.C. Equipment for testing, measuring or monitoring of protective measures. Part 1: general requirements.
IEC 304	Colour Code for Optical Fibres
ISO/IEC 11801 - Ed. 2.0 - English	Information technology - Generic cabling for customer premises
IEC 62061	Safety of machinery - Functional safety of safety-related electrical, electronic and programmable electronic control systems.
ISA	The Instrumentation, Systems and Automation Society
ISA S5.1	Instrument symbols and identification
ISA S5.3	Graphic symbols for distributed control/shared displayed instrumentation logic and computer system
ISA S5.4	Instrument loop diagrams
ISA S7.0.01	Quality standard for instrument air
ISA S18.1	Annunciator sequences and specification (R1992)
ISA S75-01	Flow equation for sizing control valves (R1995)
ISA S75-02	Control valve capacity test procedures
ISA S75-03	Face to face dimensions for integral flanged globe style control valves bodies
ISA S75-04	Face to face dimensions for flangeless control valves
ISA S75.12	Face to face dimensions for socket weld-end and screwed-end globe-style control valves
ISA S75.15	Face to face dimensions for buttweld-end globe-style control valves
ISA S75.16	Face to face dimensions for flanged globe style control valves bodies
ISA S75-19	Hydraulic testing of control valves

Authority Name & Relevant Codes	Description
ANSI	American National Standards Institute
ANSI B 16.1	Cast Iron pipe flanges and flanged fittings
ANSI B 16.5	Pipe flanges and flanged fittings
ANSI B16.10	Face to face and end to end dimensions of valves
ANSI B16.34	Valves-flanged, threaded and welding end
FCI	Fluid Controls Institute Inc.
FCI 70-2	Control valve seat leakage
ASME	American Society Of Mechanical Engineers
ASME –Section VIII, Div1 part UG 125 through136 - Div2 part AR	Unfired pressure vessel - Pressure relief devices
ASME –Section I,	Rules for construction power boilers.
ASME, section IX	Boiler and pressure vessel code - Welding & Brazing qualification
API	American Petroleum Institute (where applicable)
UTE	Union Technique de l'Electricite
UTE C18-510	Collection of general provisions for electrical safety.
UTE C18-530	Collection of electrical safety requirements for authorized personnel non-electrician worker (B0, H0), electrical executant (b1, h1), maintenance supervisor (BR).
UTE C18-540	Collection of general provisions for electrical safety
UTE C91-005	Electromagnetic compatibility (EMC). Part 5: installation and mitigation guidelines.
UTE C46-302	Industrial-process measurement and control. Acceptance tests for absolute pressure, relative pressure, and differential pressure transmitters.
EU	European Union Regulations
	(where applicable)
NFPA	National Fire Protection Authority
	(where applicable)

Where the above codes and standards are used, the design shall still comply with all laws or regulations of local authorities.

4.4 CE Marking

Equipment shall carry the CE mark to signify conformity to the European directives, as per the "Council of the European Communities" directive and particularly:

Reference	Subject of Directive
89/336/EEC	Electromagnetic Compatibility
94/9/EC	Equipment and Protective Systems in Potentially Explosive Atmospheres
73/23/EEC / 93/68/EEC	Low Voltage Equipment Directive and Amendment
98/37/EC	Machinery Safety
97/23/EC	Pressure Equipment Directive (PED)
1999/5/EC	Directive of the European Parliament and of the Council on Radio

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7.1 European Directives and CE

Equipment shall carry the CE mark to signify conformity to the European directives, as per the 'Council of the European Communities' Directive and particularly:

Reference	Subject of Directive
90/396/EEC	Appliances Burning Gaseous Fuels.
89/336/EEC	Electromagnetic Compatibility.
94/9/EC	Equipment and Protective Systems in Potentially Explosive Atmospheres.
73/23/EEC	Low Voltage Equipment.
98/37/EC	Machinery Safety.
97/23/EC	Pressure Equipment.
95/5/EC	Radio and Telecommunications Terminal Equipment.

If the Package is not CE Marked the vendor shall keep the HT informed of CE Marking costs, if any during tender stage, and full supporting documentations shall be provided by Vendor for Application of CE Marking within eight (8) weeks of PO Date

In any case,The Vendor is responsible for CE Marking conformity.

For further detailed information refer to the guide lines on the European Community website. http://europa.eu.int/comm/enterprise/newapproach/newapproach.htm - Guide to implementation of directive based on the New Approach and the Global Approach.

7.2 Statutory Codes

All electrical components, equipment, machines and materials shall comply in design, manufacture, testing and performance with the current issue of all relevant standards, codes, regulations and directives having jurisdiction over the manufacture installation and operation of plant in New Caledonia.

The following tables list the main electrical norms:

International Electro Technical Commission (IEC)

IEC 60024.5	Classification of Degrees of Protection Provided by Enclosures for Rotating Machinery.
IEC 60038	IEC Standard Voltage.
IEC 60044	Instrument Transformers
IEC 60050	International Electro technical Vocabulary.
IEC 60051	Recommendations for Indicating Electrical Measuring Instruments and their Accessories.
IEC 60056	Specification for High-Voltage AC Current Circuit Breakers.
IEC 60070	Power Capacitors.
IEC 60071	Insulation Coordination.
IEC 60073	Coding of Indicating Devices and Actuators by Colours.
IEC 60076	Power Transformers
IEC 60079	Electrical Apparatus for Explosive Gas Atmospheres

International Electro Technical Commission (IEC)

IEC 60085	Method for Determining the Thermal Classification of Electrical Insulation.
IEC 60129	Specification for Alternating Current Disconnectors and Earthing Switches.
IEC 60137	Specification for Bushings.
IEC 60144	Degrees of Protection of Enclosures of Switchgear and Control gear for Voltages including 1000VAC and 1200VDC.
IEC 60146	Semiconductors Converters.
IEC 60147	Semiconductor Devices.
IEC 60157	Low Voltage Switchgear and Control gear.
IEC 60158	Low Voltage Control gear.
IEC 60044	Specification for Measuring Transformers.
IEC 60204	Safety of Machinery
IEC 60214	On-Load Tap Changers.
IEC 60225-66	IEC Recommendation, Octave, Half-Octave and Third-Octave Band Filters Intended for the Analysis of Sounds and Vibrations.
IEC 60243	Recommended Methods of Test for Electric Strength of Solid Insulating Materials at Power Frequencies.
IEC 60255	Electrical Relays.
IEC 60259	Cells and Batteries – Nickel Cadmium with Partial Gas Recombination
IEC 60277	Definitions of Switchgear and Control gear.
IEC 60282	Fuses for Voltages Exceeding 1000 VAC.
IEC 60289	Reactors.
IEC 60292	Motor Starters for Voltages up to and including 1000VAC and 1200VDC.
IEC 60296	Specification for Unused Mineral Insulating Oils for Transformers and Switchgear.
IEC 60309	Industrial Plugs, Socket Outlets, and Couplers for AC and DC Supplies.
IEC 60331	Fire-Resisting Characteristics of Electric Cables.
IEC 60337	Control Switches for Auxiliary Circuits for Voltages up to and in including 1000VAC and 1200VDC.
IEC60354	Loading Guide for Oil-Immersed Transformers for On-load Tap Changers.
IEC 60364	Electrical Installation of buildings.
IEC 60381	Analogue Signals for Process Control Systems.
IEC 60408	Air-break Switches, Air-break Disconnectors, Air-Break Switch Disconnectors, and Fuse-combination Units for Voltages up to and including 1000 VAC and 1200 VDC.
IEC 60439	Factory Built Assemblies of Low Voltage Switchgear and Control Gear.

International Electro Technical Commission (IEC)

IEC 60445	Identification of Apparatus Terminals and General Rules for a Uniform System of Terminal Marking.
IEC 60466	High-voltage Insulation Enclosed Switchgear and Control gear.
IEC 60470	Specification for Contactors.
IEC 60478	Stabilized Power Supplies D.C.
IEC 60517	High-voltage Metal Enclosed Switchgear for Rated Voltages of 72.5 kV and above.
IEC 60534	Industrial Process Control Valves.
IEC 60542	Application Guide for On-load Tap Changers.
IEC 60549	High Voltage Fuses for the External Protection of Shunt Power Capacitors.
IEC 60551	Determination of Transformer and Reactor Sound Levels.
IEC 60593	Internal Fuses for Internal Over-Pressure.
IEC 60606	Application of Power Transformers.
IEC 60616	Terminal and Tapping Markings for Transformers.
IEC 60621	Electrical Installation for Outdoor Sites Under Heavy Conditions (Including Open-Cast Mines and Quarries)
IEC 60622	Cells and Batteries – sealed Nickel Cadmium
IEC 60623	Cells and Batteries – Vented Nickel Cadmium
IEC 60632	Specification of Motor Starters for Voltages above 1 kV AC and 1.2 kV DC.
IEC 60644	Specification for High-voltage Fuse Links for Motor Circuit Applications.
IEC 60654-4	Corrosive and Erosive Influences.
IEC 60694	Specification for Common Requirements for High Voltage Switchgear and Control gear Standard.
IEC 60702	Mineral insulated cables and their termination for use in process control.
IEC 60722	Guide to Lightning Impulse and Switching Impulse Testing of Power Transformers and Reactors.
IEC 60751	Industrial Platinum Resistance Thermometers Sensors.
IEC 60755	Residual Current Operated Protective Device
IEC 60726	Dry Type Power Transformers.
IEC 60800	Electrical Surface Heating.
IEC 60801	Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment.
IEC 60896	Stationary Lead-Acid Batteries General Requirements and Methods of Testing.
IEC 60905	Loading Guide for Air Cooled Power Transformers.

International Electro Technical Commission (IEC)

IEC 60947-2	Circuit Breakers.
IEC 60972	Classification and Interpretation of New Lighting products.
IEC 61100	Classification of Insulating Liquids According to Fire Point.
IEC 61131-3	Programmable Controllers Part 3: Programming Languages 1993.
IEC 61241	Electrical Apparatus used in the Presence of Combustible Dust.

		General
C 01 xxx	IEC60 050	International electro technical vocabulary The international System of Units (SI).
NFC 04 201		Colour standard for general purposes.
C 03 00x		Letter symbols for use in electrical technology.
C 03 2xx	IEC 60617	Graphic symbols – Diagrams – Drawing practise.
NFC 10 03	IEC 60909 IEC 60865	Short-circuit current calculations. Thermal Effect on Equipment.
		Statutory Regulations
NFC 12 101		Statutory regulations for the protection of workers in premises which make use of electric currents.
NFC 12 330		Statutory regulations for the protection of workers in mines and quarries which make use of electric currents.
Decree 14/Nov/1988		Protection of Workers against Electric Currents.
Order 10/11/1976 modified by Order 07/07/1980		Safety installations.
UTE C 18-510		Enabling of Workers.
Directive No. 87/404/CEE		Directive of the European Community concerning simple pressure vessels.
EN 50 – 081 (NFC 91-081)	Electromagnetic compatibility. Generic emission standard.	EN 50 – 081. (NFC 91-081).
EN 50 – 082 (NFC 91-082)	Electromagnetic compatibility. Generic immunity standard.	EN 50 – 082. (NFC 91-082).
EN 50 014/15/16/18/19/21		Ex"O", Ex"P", Ex"E", Ex"N" Explosion Proof Rule.

		Electrical Installations
NFC 13 100	IEC60364	Consumer substations installed in building and fed by a second category voltage public distribution system.
NFC 13 200		High voltage electrical installations. Requirements.
NFC 14 100		Low voltage mains installations.
NFC 15 100		Low voltage electrical installations.
NFC 17 100	& NFC 17 102	Lightning protection of buildings. Requirements NFPA 780 Code.
UTE C 15-443		Lightning protection of buildings.
NFC 17 200	& NFC 17 202	Public lighting installations. Requirements.
UTE C 15-105		Determination of cross-sectional area of conductors and selection of protective devices. Practical methods.
UTE C 18-510		Collection of general provisions for electrical safety.
		Cables
UTE C 15-520		Cable Installation.
NFC 32 07	IEC 60332	Insulated cables and flexible cords for installations. Classification tests on cables and cords with respect to their behaviour to fire.
NFC 32 112	IEC 60228 IEC 60811	Insulated cables and cords for installations and equipment. NF EN 60228.
NFC 33 xxx		Insulated conductors and their accessories for power systems.
NFC 34 xxx		Bare conductors for overhead lines.
		Equipment
NFC 20 010	IEC 60529	Classification of degrees of protection provided by enclosures for electrical equipment.
NF EN 50-102		Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (ik code).
NF H95-110		Continuous mechanical handling equipment. Safety code. Special requirements.
NFC EN 60079		Electrical apparatus for potentially explosive atmosphere.
NFC EN 60034	IEC 60072	Rotating electrical machines.

NFC 52 200	IEC 60076	Transformer. NF EN 60076.1, NF EN 61558.2.6.
NF EN 50091-1		Uninterruptible supplies first part: general uses and safety requirements.
NFC EN 61000	IEC 61000	Electromagnetic compatibility (EMC).
C 63 110		Low voltage contactors.
NFC 63 120	IEC 60947	Circuit breakers for distribution circuits.
NFC 63-210/220	IEC 60269	Low voltage fuses.
NFC 63 xxx		Low voltage switchgear and control gear for industrial use.
NFC 64 xxx	IEC 60298	High voltage switchgear and control gear.
NFC 64-130	IEC 60265	High voltage switches.
NFC64-134	IEC 60420	High voltage alternating current fuse switch combinations and fuse circuit breaker combinations.
NFC 68302	EN 50262	Metric cable glands for electrical installation.
NFC 42 330		Industrial platinum resistance thermometer elements.
NFC 71 121		Electric lighting fittings. Simplified method of predetermining illumination within indoor locations and corresponding classification of lighting fittings.
		Equipment
NF C71-800		Performance of self-contained lighting for emergency escape route lighting covered by regulation in ERP and ERT.
NF C71-801		Performance of self-contained lighting for emergency escape route lighting in open areas, covered by regulation in ERP and ERT.
NF EN 60-598-		Part 2-22: Particular requirements for emergency lighting.
NFC 15 100 Part 6		Maintenance and checking of installations.
NF C32-112	IEC 60227	Conductors of insulated cables.
NF C32201 NF C32202	IEC 60227	PVC insulated flexible cables and cords with circular conductors and a rated voltage not exceeding 750V.
EN 60–204 (NFC79-130)	.	Safety of machinery. Electrical equipment of machines. General requirements.

Packing, Marking and Shipping Instructions

04	13/Aug/2007	B.Turpin	V.Vogewaren	D.Mielcarek		IFE
03	05/Jul/2008	A Pearcey	A Legrand	D Mielcarek	M. Beaupre	IFE
02	06/Mar/2008	A Pearcey	A Legrand	JP Charneau	M. Beaupre	IFE
01	22/Feb/2008	A Pearcey	A Legrand	JP Charneau	M. Beaupre	Issue for Client Approval
00	30/Nov/2005	A Pearcey	A Legrand	JP Charneau		Issue for Use
0A	11/Nov/2005	A Pearcey	A Legrand	JP Charneau		Issue for Comments
Rev.	Date (dd/mmm/yyyy)	Author (Name)	Checked (Name)	Approved (Name)	Approved (Name)	Status
HT					Owner	

Table of Contents

1. Purpose

The purpose of these instructions is to describe SUPPLIER's minimum packing requirements for the Koniambo Nickel Project, New Caledonia and also to define marking and shipping requirements.

2. Scope

The scope of these instructions is to define SUPPLIER's responsibilities in terms of:

- Preservation of the GOODS before packing.
- Packing of the GOODS for road, rail, sea and/or air transportation to module yard(s) and/or New Caledonia.
- Marking of cases/crates.
- Services required.

Documents to be submitted to HT, with required schedule.

3. Application

Applies to all SUPPLIER's of GOODS for the Project.

4. Definitions

"HT"	means a Joint Venture formed between hatch and Tehcnip, acting as Owner's Representative with full authority to manage and direct the activities of the SUPPLIER/
"OWNER"	means Koniambo Nickel SAS.
"SUPPLIER"	means Company(ies) to whom the contractor has placed Purchase Order for GOODS.
"GOODS"	means all or part of the articles, material, equipment supplies including technical documentation, as described in the Purchase Order, to be supplied by SUPPLIER.
"PACKER"	means Company to whom SUPPLIER intends to sub-contract the packing.
"FREIGHT FORWARDER"	means the Company responsible for performing freight forwarding activities.
"EXPORTER"	means SUPPLIER, when the GOODS are shipped FCA, FAS or FOB, or means HT when the GOODS are shipped Ex-Works, to the module yards and/or the jobsite.
"IMPORTER	"means Koniambo Nickel SAS.

5. General Requirements

The following instructions are intended as minimum requirements, and adherence to these instructions in no way absolves or relieves SUPPLIER of any responsibility or obligation outlined in the Purchase Order. In all circumstances, the packing will be calculated in order to support any strain exerted on the GOODS during transportation. They must be adhered to specifically, in order to permit the delivery of the GOODS to the module yard and/or the jobsite by sea, road or air, in good condition.

GOODS shall be export packed in compliance with the best-established practices for international construction projects, in accordance with the following directives. In the event of any divergence between these instructions and the established practices, these instructions shall govern.

Due to climatic conditions and the complex transport operation(s), it is essential that protection and packing is of the highest standard. Packing means to efficiently protect the GOODS during the total transport operation; from the moment they leave the factory until they are delivered to the module yard(s) and/or the jobsite, including handling operations (loading/unloading) and storage.

When SUPPLIER does not perform the packing and therefore intends to sub-contract, SUPPLIER has to inform HT of the name and address of proposed PACKER(s). HT reserves the right to reject any of these companies.

It is the responsibility of the SUPPLIER to liaise with HT's Traffic & Logistic Department to ensure that the quarantine requirements (refer to ISPM 15 and/or NIMP 15 codes) pertaining to importation of wooden cases/crates at the destination, are known and implemented, before packing has commenced.

Hay, straw or similar vegetable fibres subject to disease or fungus shall not be used in packing.

6. Definition and Selection of Packaging

Packages are to be made according to 10 categories, described in articles 8.2 to 8.12, depending on the type of materials, their fragility and size.

These 10 categories have been established for the protection of equipment and material during multi-modal transports, i.e.: combination of overland and sea transport; containerization, air transportation.

In a general manner, the GOODS have to be packed in such a way that crates, bundles, pallets and the like can be stowed into General Purpose containers, wherever possible.

If SUPPLIER is in any doubt as to the correct method of protection or packing, he should contact HT's Traffic and Logistic Department, in order to mutually agree on the adequate type of packing, to be used

6.1 Hazardous Materials

Hazardous materials shall be packed and identified on a separate packing list to those for non-hazardous material. All hazardous material must be prepared in adherence to the detailed requirement relating to packing, marking and labelling set out in the most recent report of the Board's Standard Advisory Committee on the Carriage of Dangerous Goods in Ships (The Blue Book) for sea freight, and the Restricted Articles Regulations, laid down by the International Air Transport Association for airfreight.

All hazardous material shall be identified, by the appropriate hazard class and technical, or proper shipping name, in accordance with the table below. All packing lists for hazardous material shall contain the following statement: "This is to certify that the above named material is properly classified, described, packaged, marked and labelled, and is in proper condition for transportation according to the appropriate IMDG/ADR/RID/IATA regulations".

NAME		SUPPLIER
TITLE		SIGNATURE
		TECHNICAL SHIPPING NAME
HAZARDOUS CLASS NR		
UN Number	IMDG Page	Flashpoint (if any)

SUPPLIER shall produce any necessary hazardous cargo certificates, as required by the appropriate Government and International Transportation regulations, for all such shipments.

All GOODS containing hazardous material(s) shall be shipped dry and packed separately. Shipping instructions will be provided with the products.

All GOODS, which are nitrogen purged for transport and storage purposes, are to be clearly identified. The relevant nitrogen hazardous class identification and documentation, is to be provided, by the SUPPLIER, to HT's Traffic and Logistic Department.

6.2 Spare Parts

All spare parts and special tools that are required to be shipped with the GOODS must be packed separately, from the main equipment, Refer to Spare Parts Procedure, 319000-00000-PP-GPCO-0108.

For spare parts the cases/crates, shall be identified respectively:

- CAPITA/CRITICAL SPARE PARTS
- INSTALLATION, PRE-OPERATIONAL TESTING, COMMISSIONING AND PERFORMANCE TESTS
- SPARE PARTS
- START-UP SPARE PARTS
- TWO (2) YEARS SPARE PARTS

With large capital letters, with the relevant Purchase Order number and Equipment number.

Special tools for construction and commissioning are to be packed separately from those required for plant operation. The cases/crates will be marked accordingly:

- SPECIAL TOOLS FOR CONSTRUCTION AND COMMISSIONING
- SPECIAL TOOLS FOR PLANT OPERATION

With large capital letters, with the relevant Purchase Order number and Equipment number.

6.3 Refractory Materials

Firebricks, special tiles and refractory materials shall be crated after sealing in a polyethylene liner. These crates shall be skid mounted. Instructions regarding storage prior to installation shall be stencilled on each crate, with particular reference to adverse weather/temperature/humidity conditions and/or any other storage instructions recommended by the SUPPLIER.

6.4 Accessories

Accessories for apparatus and vessels (small parts, bolts, nuts, washers, gaskets, etc.) are to be packed in wooden cases/crates, separately for each apparatus or vessel. These wooden cases/crates must be marked with the same Indent Code as the apparatus/vessel to which it belongs.

The packaging for electrical panels and instruments shall be provided with full protection against physical damage and atmospheric attack during transit and possible long storage periods, adverse conditions, at the jobsite, for up to twelve (12) months.

Crates which are transported by sea shall be marked *"STORE IN HOLD"*.

Pipeline/vessel insulation shall be packed in a double waterproof wooden plywood case/crate and secured to pallets (refer to article 8.5).

Drums of insulation mastic and other products shall be shipped on pallets.

7. Marking Instructions and Storage Code

7.1 Marking Instructions

Packages and crates will be marked with indelible black paint, resistant to seawater. Marking must be perfectly legible.

The shipping marks, which will be advised by HT's Traffic and Logistics Department, shall be stencilled on two sides and one end in clear characters at least 5 centimetres high (where crate size permits, otherwise use optimum size for each package dimension).

When the GOODS are to be shipped in containers then marking may be stencilled on one end only. However, packages must be stowed in a manner that shows these marks.

Crates containing fragile articles must be packed with special precaution against risk of breakage and must be stencilled on all sides "FRAGILE - HANDLE WITH CARE". Where crates are not to be overturned, SUPPLIER must show on the crates, clear and readily visible identification, to ensure they are kept in the correct position.

Packages/equipment of 2,000 kg or more must be marked with slinging points on all sides, in addition to the centre of gravity marks.

Metal tags or labels must be stamped or indelibly marked with full shipping marks and must be securely attached using 6 twists of stainless steel wire to all loose bundles, or items. Alternatively, marking boards can be securely strapped to bundles or when the surface of a package is too small to permit stencilling.

Number packages consecutively i.e. 1 of 10, 2 of 10, etc. Do not duplicate package numbers.

SUPPLIER is responsible for any loss or damage caused by incorrect marking.

All cases/crates shall also be marked with the appropriate international standard graphic symbols for handling as shown in Appendix G.

As a minimum, all cases/crates are to be marked clearly on all four sides with:

- "HANDLE WITH CARE"
- "RIGHT SIDE UP"
- "KEEP DRY"

In the case of packages with a single gross weight totalling 2,000 kg and/or a height of more than 1m, the centre of gravity shall be clearly marked with the symbol on two adjoining sides.

For all items of equipment with an eccentric centre of gravity this symbol shall be marked at the bottom, side and top of the package.

The slinging and lashing points shall be marked with a chain symbol.

When packing in cases/crates, these packages shall also have metal or plastic corners at the slinging points.

All material must also bear appropriate shipping marks completed within a frame, as indicated in Appendix A.

7.2 Storage Code

The type of storage required is specified as follows, it will be shown on each packaging in **RED colour.**

X	Crates or packages to be stored outdoor without covers
XX	Crates or packages to be stored under tarpaulin
XXX	Crates or packages to be stored in covered or enclosed premises
XXXX	Crates or packages which must be stored in air-conditioned premises

Refer to equipment storage codes in Appendix B.

8. Packing Description (Does not apply to Modularisation and Pre-Assembly)

8.1 Packaging for Combined Land and Sea Transportation

Only wood is to be used for making export cases/crates and/or reels; **any other material such as chipboard, fibreboard, cardboard, is strictly prohibited.**

Packing cases/crates are to be designed to ensure the best possible packaging. They must be strong enough to be stacked on **several layers.**

They are to be made of high quality hardwood or softwood, dry and sound, meeting the following general requirements:

- Dryness of about 18 - 20 %.
- Thickness: 18 - 34 + 2 mm depending on the weight of the packed goods and on the dimensions of the cases.
- Free of loose or decayed knots exceeding one third of the board's width.
- Free of cracks or splits longer than 25/30 cm.
- Width of the board used: 12 – 25 cm for crates.
- Ends should be screwed or nailed in a manner where no sharp pieces are exposed.

Prior to packing, the GOODS must be effectively protected against corrosion, and preserved prior to export packing. The protection will be determined more precisely by SUPPLIER according to the type of GOODS and the means of transport actually used, the duration of transport, and storage conditions at the module yard(s) and/or the jobsite.

Machined surfaces are to be protected by the SUPPLIER. Protection of inner faces is the responsibility of SUPPLIER: cleaning, coating, plugging/sealing, lubrication, etc

All items of fragile nature shall be suitably packed with special precaution against risk of breakage. Where GOODS are encased or otherwise completely enclosed, SUPPLIER shall be responsible for suitable inner packing.

Internal immobilization of material: all mobile or overhanging parts situated inside the material must have a support or other adapted type of immobilization put in place by SUPPLIER. The goods are to be secured inside the crates so as to guarantee perfect immobility during transport.

Felt, cellophane paper, polyester cuttings, crepe cellulose and some equally efficient materials may be used for padding or cushioning.

Hay, straw or similar vegetable fibres subject to disease or fungus shall not be used in packing.

Packages of bulk materials shall be kept as small as possible, with gross weight not exceeding 3,000 kg and dimensions corresponding to inside dimensions of containers (see article 8.14 Containerization)

Moreover, cases/crates with a height of 2 meters and above, must have 3 straps around them.

Cases/crates must be equipped with angle-bars at sling points and fastened by means of eye-bolts, appropriate for all packing cases or crates weighing 3,000 kg or over. The traversal battens must have a minimum cross-section of 100 x 100 cm to allow easy handling by forklift trucks.

Plywood may be used instead of sawn timber to make up the packages. The board thickness depends on case/crate dimensions, weight and density of the GOODS and the package type to be used. The plywood is to be moisture resistant and marine type.

In consideration of the above, the following thicknesses are given for guidance:

Gross weight up to 500 kg	6 - 8 mm
Gross weight between 500 kg and 5 MT	10 mm
Gross weight between 5 MT and 10 MT	12 - 15 mm

Metallic parts of packages must be painted or galvanised, particularly for bundles and packages on supports.

Cases/crates weighing more than 136 kg and up to 1,000 kg shall have a raised skid platform or pallet base (40mm thickness) to permit sling or forklift access.

Cases/crates exceeding 1,000 kg shall be provided with skid runners for the number and size will be according to weight of the package.

8.1.1 Pipe, Fittings, Flanges and Valves, Structural Steel

Particular attention should be brought to pipe, fittings, flanges, valves and structural steel.

Packing categories for piping and fittings will differ according to the diameter and wall thickness of these products. SUPPLIER shall comply with the following established practice.

IMPORTANT NOTE:

Depending on the project schedule and availability of ocean vessels, the piping and structural steel may be shipped in containers. In this event, SUPPLIER has to arrange the packages in such a way it allows the stuffing into Open Top in gauge containers.

8.1.2 Pipe

Where practicable, pipe lengths shall be limited to 11.8 meters.

All pipes 2" included and below shall be packed in crates in accordance with article 8.3. All pipes to be capped and ends sealed with waterproof tape.

Pipes over 2" up to 6", shall be bundled and banded in bundles of uniform length. Bundling is carried out with U-IRON or traversal planks, joined with threaded connecting rods with locknuts. Quantities and strapping positions depend on the lengths, with a 120 cm spacing to prevent distortion. Bundle weight shall not exceed 2,000 kg. All pipes are to be capped and ends sealed with waterproof tape (tape is not necessary if end caps are of the pre-shrunk or self-sealing type).

Pipes larger than 6" shall be shipped as single lengths with the ends capped. End caps are to be of the recessed type to enable the use of soft faced hooks, but still completely sealing the end and also protecting the weld.

All stainless steel piping must be packed separately in wooden crates. Any banding of bundles is to be with the same material.

8.1.3 Pipe Fittings, Flanges and Valves

All pipe fittings, flanges and valves up to 6", are to be packed in cases/crates. For items over 6", these may be fixed securely to a pallet base and enclosed in an open boarded crate, for protection.

Where valves have actuators attached, rigidity must be ensured for the valve and actuator. The vulnerable parts of the actuator are to be completely protected within a wooden crate.

All stainless steel fittings, flanges and valves of all sizes, must be packed separately in wooden crates. Any strapping is to be with the same material.

8.1.4 Structural Steel

Structural Steel, reinforcing rods, bars, etc., should be packed in bundles of uniform length. Refer to above articles 8.1.2 and 8.1.3, for strapping requirements. Bundle weight not normally to exceed 2,000 kg.

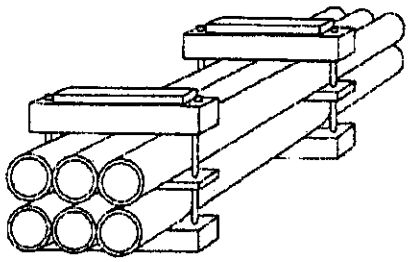
Fabricated structures and structural steelwork, etc, should be bundled and packed using wooden beams and long bolting to secure the load.

8.2 Bundling – Packing Category I

8.2.1 Type of Equipment

Equipment which is not subject to damage by corrosion or mechanical effect, i.e. pipes, piping, structural steel.

Packing Category I

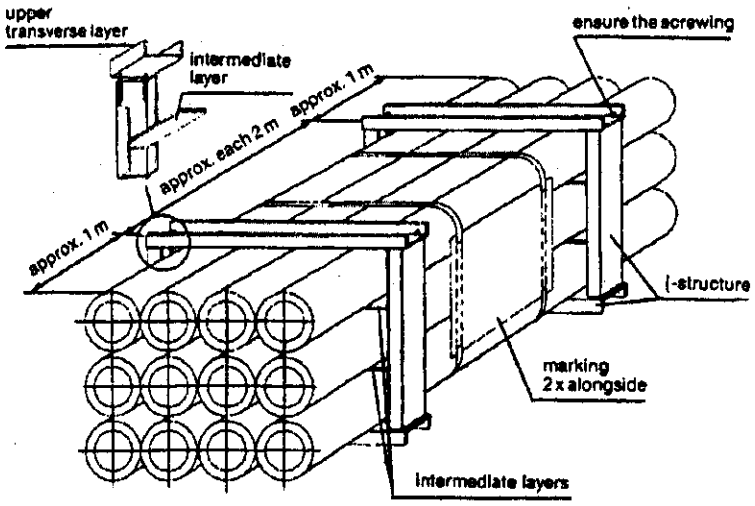


8.2.2 Type of Construction

Bundling has to be effected

- By squared timber and threaded rods.
- With an intermediate layer (threaded on tightening bolts) according to the weight of the package.
- Wedge-shaped timbers must be added at the outer points of lower layer.
- Between the bolts a spacer must be nailed.
- The bolts must be secured (e.g. by locking nut).
- If single parts could protrude, an appropriate protection must be installed (flat iron or plates).
- Bundling with steel straps or PVC straps is not accepted.

Bundling by U-shaped iron – Packing Category I A



8.3 Skids, Square Timber Constructions, Casings – Packing Category II

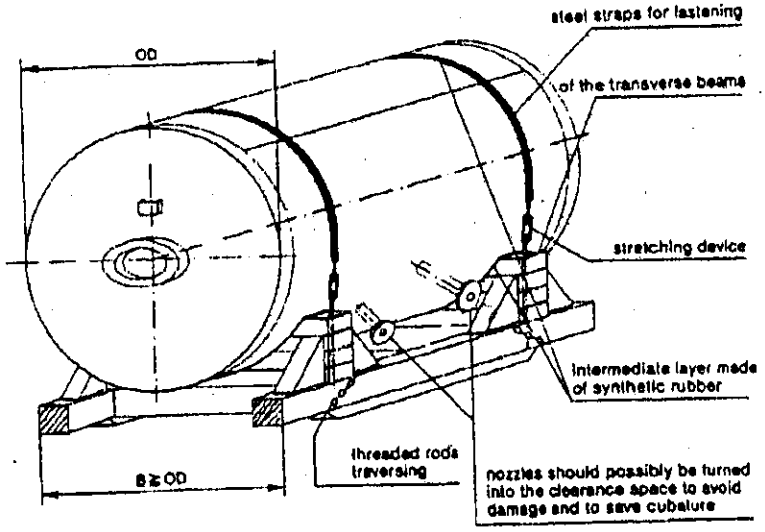
8.3.1 Type of Equipment

Voluminous apparatus, tanks and/or heavy pieces that are not vulnerable to mechanical or corrosive effects.

8.3.2 Type of Construction

- The construction can be made of wood or of metal.
- The fastening of the packages on the skid will be made by steel straps (flat iron) which have to be elastically lined, non-slip and securely bolted onto the skids.
- Flange openings have to be closed with gaskets and blind flanges or, if necessary, provided with cover.
- Skid constructions may not be less than the dimensions of the package in length or in width.
- Tanks and apparatus with their own support cradles must be supplied with an anti-slip lining.

Packing Category II



8.4 Crates – Packing Category III

8.4.1 Type of Equipment

Fabricated equipment, which cannot be transported on cradles; frame-works, prefabricated piping and fittings, mechanical and electrical assemblies.

8.4.2 Type of Construction

Bottom

- Longitudinal runners are required for all shipments and for container stuffing, cross cleats can also be used.
- Bottom boarding to be spaced and nailed.

Sides

- side wall casing vertical, inside battens.
- space between wall boards shall not exceed average width of the boards.

Cover

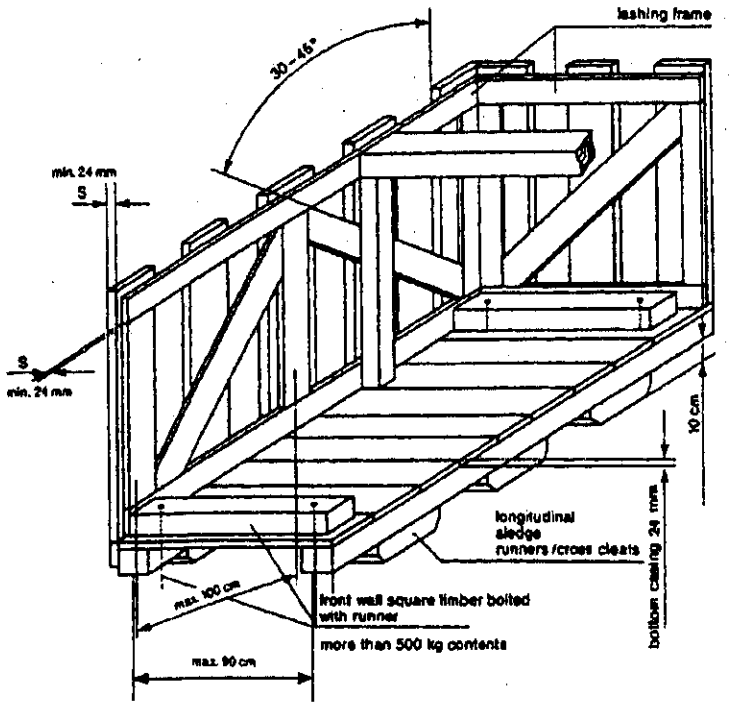
- Longitudinal boarding, diagonal battens, diagonal joists, supported towards the bottom.
- Width of boards 10 -18 cm.

The equipment must be safely fastened to the bottom with bolts, possibly by the runners or to be spread in such a manner that no protruding parts are possible. For parts, sensitive to rainwater and/or debris, a protection has to be made by a foil cap.

If it is possible that single parts could protrude through the front/back side wall, they shall be closed completely. The marking of the package shall be done on plywood plates at the prescribed sides.

The arrangement of the runners and sledge runners can be taken from the sketch.

Packing Category III



8.5 Cases with Lining – Packing Category IV

8.5.1 Type of Equipment

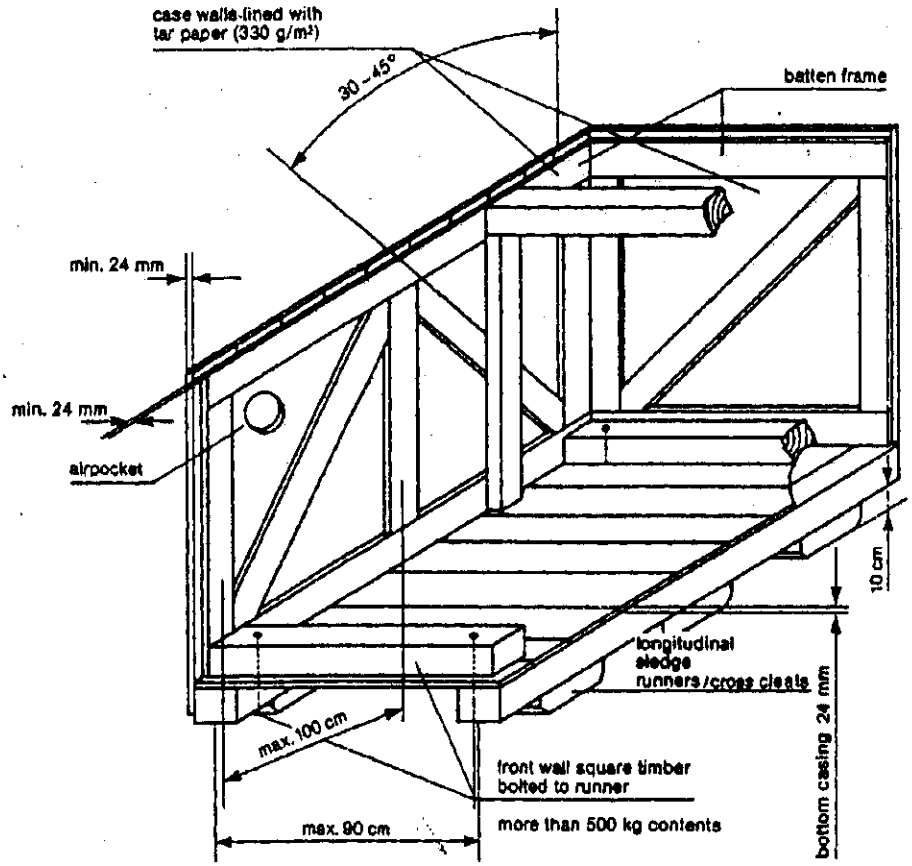
Equipment and mechanical parts

Equipment sensitive to mechanical damage or parts and components that are particularly at risk of theft or loss; pumps, elbows, flanges, fittings, tools, erection materials, etc.

8.5.2 Type of Construction

The same type of construction as article 8.4.2, but with all sides completely boarded without space between the boards. Sides to be provided with waterproof lining; fabric-reinforced waterproof tar paper or polyethylene-foils resistant to ultraviolet rays can be used. Polyethylene-foil shall be fixed under the lid cover to avoid penetration of water. At weights of more than 500 kg the longitudinal runner must be bolted to the front all square timber. For ventilation inside the case, an opening in the waterproof lining must be placed between the diagonal battens and diagonal joists.

Packing Category IV



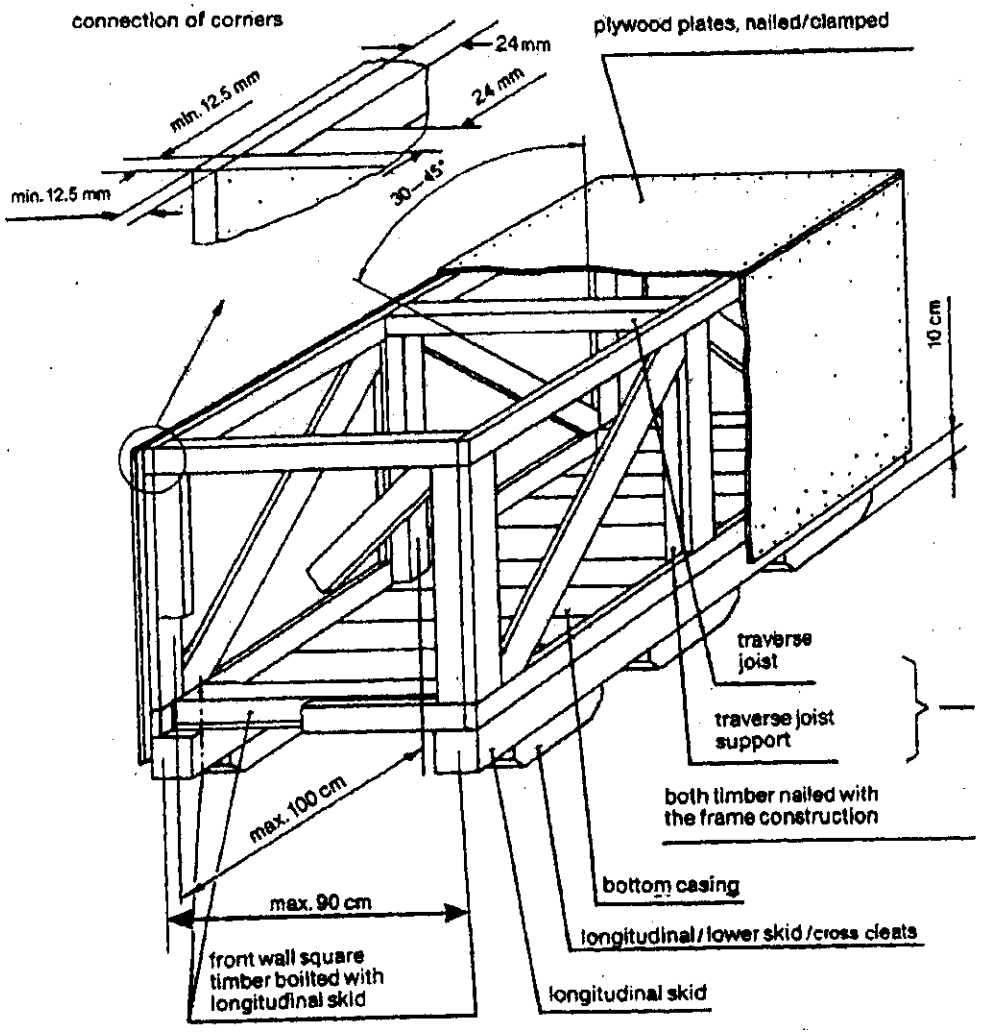
8.6 Cases with Alternative Surface Materials

8.6.1 Plywood Box – Packing Category IV A

Case constructed of 5 layers of watertight, glued plywood with a total thickness of 12.5 mm. The frame must be constructed from minimum 24 mm timber and must be suitable for the weight and nature of the parts to be packed. Planed square timber must be bolted with longitudinal skid and covered with diagonal joists. If applicable, construction of the cover and sides is to include diagonal bracing. Covers consisting of several layers of plywood are to be sealed with durable elastic putty or additional water-resistant sheets to be fixed.

Type of construction, requires approval by HT's Traffic and Logistics Department, prior to packing.

Packing Category IV A



8.6.2 Cases made of Corrugated Cardboard for Transportation in Container, Overland Transport and Airfreight – Packing Category IV B

8.6.2.1 Type of Equipment

Spare parts, electrical and electronic parts, homogeneous parts

8.6.2.2 Type of Construction

Case made of tested, water-resistant, glued corrugated cardboard, 2-ply and 3-ply, on a one-way pallet; folding of boxes and corrosion protection as per individual instruction.

Type of construction requires individual approval by HT's Traffic and Logistics Department, prior to packing.

8.6.3 Frame Construction with Corrugated Cardboard – Packing Category IV C

Wooden frame construction according to article 8.4.2 with boarding made of 3-ply water resistant and glued cellular cardboard.

Type of construction requires individual approval by HT's Traffic and Logistics Department, prior to packing.

8.7 Case with Barrier Material – Polyethylene Foil – Packing Category V

8.7.1 Type of Equipment

Sensitive equipment, simple electrical equipment, insulation materials, fire-resistant materials, with non-corrosion-guarantee for a period up to twelve (12) months.

8.7.2 Type of Construction

Preservation by welding in polyethylene-foil with addition of desiccants and if necessary, application of non-corrosive contact agents, otherwise, type of construction as indicated in article 8.5.2.

Air ventilation inside the case, according to type of construction as indicated in article 8.5.2.

Additional marking:

- Case with desiccants.

8.8 Case with Barrier Material – Aluminium Compound Foil – Packing Category VI

8.8.1 Type of Equipment

Electrical equipment such as, switchboards, electric motors, sensitive equipment, with non-corrosion-guarantee, for a period up to twelve (12) months.

8.8.2 Type of Construction

Type of construction as indicated in article 8.5.2.

- For GOODS, which are highly sensitive to shock or vibrations, such as computers, electronic instruments, or those of small dimensions and weight.
- For GOODS urgently required at the module yard(s) and/or jobsite.

8.13.2 Type of Packing

Depending on the goods to be packed, SUPPLIER may use one of the following types:

- A triple-corrugated cardboard container made with waterproofed glue and a barrier layer of polyethylene on the outsides to keep out humidity.
- Wooden/cardboard packing cases: the wood being used for the framework and base of the cases, waterproofed triple-corrugated cardboard being used for the sides and top. These cases are of the "Bell" type, and used for material of small or medium dimensions.
- For larger dimensions, plywood cases are acceptable. The timber characteristics, cross-sections and thickness will be systematically determined by the nature of the loads to be packed.

8.13.3 Dimensions

In order to optimize the existing transport facilities (passenger or cargo aircraft), the dimensions of:

- Triple-corrugated containers.
- Wooden/cardboard packing cases.
- Plywood cases.

Are to be adapted to pallets used for air transportation.

8.14 Containerization

As required by HT, the SUPPLIER shall stuff the GOODS into 20 or 40 foot containers (dry, open top, flat racks, etc.).

The maximum inside dimensions of containers are to be considered:

- 40 foot containers: 11.80 m x 2.20 m x 2.05 m
- 20 foot containers: 5.80 m x 2.20 m x 2.05m

The present definition of containerization is valid for sea containers.

8.14.1 Protection of Cases/Crates

Since shipping containers are in general not water tight, packing in contact with the floor of the container shall be raised in order to prevent it from being damaged by the accumulation of water (on pallets, for example).

8.14.2 Mechanical Constraints

The mechanical constraints for "general use" closed containers are of a different nature (height of "stacking" being limited inside the containers), the packing for the GOODS may be of a lighter structure.

However, it is necessary that the packing be appropriate so as to protect the GOODS on site during the storage period, as required in articles 5 and11 of these instructions, after discharging of the GOOD'S from the containers.

Note:

It is the responsibility of the SUPPLIER to ensure that the cases/crates are stowed, secured and fastened inside the container. The SUPPLIER will take all necessary precautions to conform to the maximum weight allowed and the centre of gravity of the container. The securing and fastening of the cases/crates can be carried out by nailing timbers on the bottom or on the vertical sides of the container.

9. Packing Conformance

9.1 Packing Documentation

9.1.1 Packing List

The packing list will be prepared on HT's standard forms (Appendix C) and will show the summary of the content of each package.

Only one Packing List Number shall be given by HT in due time for each summary of the content of each definite batch of GOODS, corresponding to HT's Release Note for Packing. The Packing List Number is allocated by HT's Expediting Department.

Two (2) copies of the packing list in a waterproof plastic envelope must be securely nailed under a steel sheet, on the outer surface of the first package of the batch with the associated packing note corresponding to the package, as indicated in Appendix E.

9.2 Packing Note

The packing note will be prepared on HT's standard forms (Appendix D) and the description must correspond exactly to the detailed contents of the package. **The designation "accessories for" or "batch of nuts and bolts" for example, are forbidden.**

A copy of the packing note shall be placed in a waterproof plastic envelope inside each package. Another copy, in a waterproof plastic envelope shall be placed on the outside of the package under a steel sheet as indicated in Appendix E.

9.2.1 Important Note:

AS AND WHEN REQUESTED BY HT'S TRAFFIC and LOGISTICS DEPARTMENT, THE ABOVE DOCUMENTS ARE TO BE FURNISHED IN ENGLISH AND FRENCH.

9.3 Packing Inspection - Packing Execution

Packing of equipment may be subject to inspection carried out by HT, prior to cargo dispatch.

Such inspection will be confirmed by HT in due time and shall take place at SUPPLIER' S designated premises, as per the following procedure:

- Cases/crates shall be left open.
- Shrink-wrapped plastic covering or vacuum plastic covering operations to be on stand by, if applicable.
- Packing lists and packing notes to be handed over to HT's inspector:
  - - for marking control.
  - - for examination of contents.

Consequently, SUPPLIER shall:

- After technical acceptance of the GOODS by HT, define the expected necessary packing preparation period.
- Prior to scheduled packing inspection date, provide HT Expediting Department with packing lists and packing notes.
- Advise HT's Expediting Department by fax, stating expected date and location of packing inspection to be performed.

After packing acceptance, notified by HT Expediting Department, proceed to:

- Shrink wrapping operation, as well as vacuum sealing, if applicable.
- Closing of cases and/or crates together with incorporation of the appropriate packing lists and packing notes as per article 9.1.

In the event that packing operations are performed by HT's packer, SUPPLIER shall comply with following procedure:

- Packing performed at SUPPLIER'S premises:

With respect to heavy and/or over-sized GOODS, SUPPLIER shall be equipped with suitable cranes (either mobile or travelling cranes) to execute lift on/lift off operations.

SUPPLIER shall ensure free access to a working area within SUPPLIER premises, to allow HT's packer to carry out the packing.

- Packing performed in HT's packer's premises:

SUPPLIER shall load onto HT packer's means of transportation, using his own lifting equipment. Lashing and securing of the GOODS, on to HT's packer's means of transportation, shall be carried out by SUPPLIER.

10. Services

In addition to the packing and shipping documents, SUPPLIER must also carry out the following services, which shall be included in his quotation:

Carriage of SUPPLIER's sub-contracted equipment and material, which must be re-grouped in SUPPLIER's or PACKER's workshops, whilst waiting for packaging.

HT reserves the right to postpone the shipping of the GOODS. In this event, any storage and insurance costs during the first ninety (90) days shall be borne by the SUPPLIER.

Loading, including lifting, securing, lashing, and stowing, of all cases, crates, or packages onto means of transportation such as, but not limited to, trailers, containers, etc.

Stuffing of containers, when required.

Preparation of accurate transport drawings, under the conditions as described in article 12 and Appendix F.

11. Responsibilities and Guarantees

SUPPLIER is responsible for the choice of category for packing according to the transport facilities used, and on the basis of the present document. In case of doubt or disagreement regarding the choice, SUPPLIER must inform HT prior to packing and await HT's approval.

All phases of packaging, marking, loading, etc. will be subject to HT's inspection.

HT reserves the right to reject the packing when the packing does not conform to these instructions and/or when the packing does not ensure perfect protection of the GOODS.

SUPPLIER is responsible for the weights and dimensions declared, and the marking of the packages. The documents must be in strict conformity with the packing contents.

The packing specified in these "Packing, Marking and Shipping Instructions" is guaranteed for a twelve (12) months storage period after delivery on site.

SUPPLIER is responsible for providing storage recommendation adapted to the GOODS. In the event of long storage, SUPPLIER or his designated representative shall be given access to the "packed" equipment where the warranty conditions require pre-operational maintenance (eg turning of motors).

According to this guarantee, SUPPLIER is held responsible in the event of goods becoming useless, damaged or broken, as a result of poor packing and/or stowing, or due to corrosion, subsequent to insufficient or inadequate protection. All direct or indirect costs resulting thereof, will be back-charged to SUPPLIER.

12. Shipping Instructions

12.1 Instructions for Heavy Lift and Over-dimensioned Equipment

12.1.1 Load Distribution

As far as transport drawings issued by SUPPLIER are concerned, SUPPLIER shall control the adequacy of the supports and/or saddles and ensure that load distribution is in compliance with HT's nominated Freight Forwarder's requirements, with respect to road and sea transportation as well as local road regulations, prior to saddle fabrication.

Note: In all cases, the maximum load distribution will never exceed 10 MT/M2

12.1.2 Preparation for Sea Fastening Operations

For any contractual delivery terms stated in the Purchase Order (EX WORKS, FCA, FAS, FOB, as per the Incoterms 2000) , SUPPLIER shall carry out the preparation of sea fastening operations according to the instructions which will be given by the shipping company through HT's Freight Forwarder and as per the following indications :

The unpacked equipment shall be prepared and equipped with:

- Lifting lugs to be calculated, defined and shown on the transport drawings. They will be used for any handling operations onto trucks for road transportation and onto vessels for sea transportation and onto wagon for rail transportation.
- Lashing points to be calculated in order to support all forces crosswise, lengthwise, and so on... They will be clearly marked on the equipment and transport drawings.

When the equipment requires utilization of special tools/equipment, such as lifting beams, slings, etc. for handling operations, **SUPPLIER SHALL INCLUDE SUCH A LIST OF SPECIAL TOOLS/EQUIPMENT IN HIS ORIGINAL PRPOSAL** which will be included in the scope of supply of the Purchase Order.

Non-compliance to the above shall be at SUPPLIER'S sole risk.

12.2 Documentation

12.2.1 Preliminary Packing Lists

Within eight (8) weeks after issuance of the Purchase Order, SUPPLIER shall furnish to HT's Expediting Department:

Three (3) copies of preliminary packing list as per HT forms, including the number of packages with their respective dimensions and weights and indicating the applicable storage code.

Three (3) copies of preliminary transportation drawings for heavy or over dimensional packages where weights and/or dimensions are equal or greater than:

- Weight 20 MT
- Length 13.50 m
- Width 3 m
- Height 3 m

With the following indications:

- Three planes view of equipment.
- Actual position of all nozzles and protruding parts.
- Net and gross weights.
- Position of the centre of gravity on the three planes.
- Accurate size and overall dimensions of cases, crates or packages.
- Slinging points of equipment or package on all planes.
- The mention of presence of nitrogen purging, where applicable.

12.2.2 Transportation Drawing

Eight (8) weeks prior to the contractual delivery date of the GOODS for shipment, SUPPLIER shall confirm to HT's Expediting Department that the transportation drawing(s) are unchanged. In the event that such drawings have been modified, SUPPLIER shall forward three (3) copies of the revised drawings.

12.2.3 Final Packing List

Four (4) weeks prior to the contractual delivery date of the GOODS for shipment, SUPPLIER shall confirm the final packing list and issue, by e-mail to HT's Expediting Department.

12.2.4 Shipping Documents

Prior to date of inspection, if any, the following SUPPLIER's documentation is to be issued to HT's Expediting Department.

1. Packing list
Five (5) copies. To be prepared on HT's form, as per Appendix C.

2. Packing Note
Five (5) copies. To be prepared on HT's form, as per Appendix D.

3. Pro-forma Invoice
Five (5) copies of SUPPLIER's pro-forma invoice shall be addressed to HT indicating following information:

- consignee
- number of delivered items (complete or partial or balance of Purchase Order scope).
- detailed designation of the GOODS.
- weights/volume.
- unit and total value.
- place and terms of delivery.
- Customs HS Code.

Particular attention shall be given to HAZARDOUS GOODS which shall be identified on a separate invoice and packing list to those for non-hazardous material.

The appropriate hazard class and technical or proper shipping terminology shall identify all hazardous material.

- When applicable, multimodal attestation of transport of hazardous material, safety data sheet and all specific documentation that may be required at origin, during transit and at destination.

  Three (3) copies of such certificates/attestations duly stamped and signed by SUPPLIER, shall be transmitted to HT, with the above requested documents.

- Certificate of origin

  SUPPLIER shall provide HT with a certificate of origin stating the country of origin for all materials manufactured **outside the E.U.**, duly stamped by SUPPLIER's local Chamber of Commerce.

  For materials manufactured **inside the E.U.**, SUPPLIER shall provide HT with an attestation of origin with indication of the manufacturing place.

12.3 Forwarding Agent

HT's designated Freight Forwarder will be nominated at a later date and advised to SUPPLIER accordingly.

The Freight Forwarder will be the sole entity contracted to perform, in the event of EXWORKS, FCA, FAS or FOB delivery terms:

- Call forward of the GOODS ready to be shipped.
- Freight booking's on appropriate means of transport.

Appendix A

Main Shipping Mark

MAIN SHIPPING MARK
PLAQUE DE MARQUAGE

Contract / Contrat	:	**KONIAMBO NICKEL PROJECT**
Port of Destination / Port de Destination	:	
Consignee / Destinataire	:	**KONIAMBO NICKEL SAS**
Supplier's Name: Nom du Fournisseur	:	
P.O. / Commande	:	
Requisition No.	:	
Indent Code /Code d'identite (4)	:	
P.L.N°. /Note de Colisage N°	:	
Package Nr. / Colis N°	:	
N. W.....kg / G.W.....kg Poids Net (kg) Poids Brut (kg)	:	
Dimension in cm	:	**L x W x H** Longueur / Largeur/ Hauteur
Storage Code / Code de Stockage	:	

1. Two copies of the Packing Note are to be attached to the outside of each package in waterproof plastic cover underneath a nailed plate. In the event equipment is dispatched unpacked, this plate should be welded on the metal pats (spot welding) or attached permanently to the package in another way depending on the material. One copy of the Packing Note is to be placed in a clearly visible point in the boxes / crates in a waterproof plastic cover.
2. The storage code shall be selected in Appendix B.
3. For complete marking (marking location, type and size of graphics, use of symbols, dangerous items....) please refer to Article 7.
4. Material Track System (Marian) Code defined in the Material Requisition.

1. Deux copies de la liste de Colisage doivent être placées dans une enveloppe plastique étanche à l'extérieur de chaque colis. Dans le cas ou l'équipement est expédié non emballé, la plaque de marquage doit être soudée sur une partie métallique (point de soudure) ou attachée d'une façon permanente au colis d'une façon appropriée. Une copie de la liste de Colisage sous enveloppe plastique étanche dort être placée dans la caisse á un endroit visible.
2. Le code de stockage doit être déterminé selon l'Annexe B.
3. Le marquage doit être complet (localisation de la plaque, type et dimensions de caractères, symboles, etc....) conformément aux spécifications du chapitre 7.
4. Code d'identification Marian (systeme de management du materiel) defini dans la Requisition de Materiel.

Appendix B

Equipment Storage Codes

EQUIPMENT STORAGE CODES

	STORAGE IN AIR CONDITIONED PREMISES	STORAGE IN COVERED OR ENCLOSED PREMISES	STORAGE UNDER TARPAULIN	STORAGE OUTDOOR WITHOUT COVERS
STORAGE CODES	xxxx	xxx	xx	X
STRUCTURAL STEEL -Panels, beams, columns, grating - bolting -Material for civil work			X	X X
EQUIPMENT -Towers, vessels, kiln, mills, air coolers, boilers -Pumps, compressors, blowers, fans, mixers, reducers -Tower and vessels internals -Bolting and special small items -Mechanical parts		X X X X	X X X	
PIPING -Flanges, fittings 6" and smaller than 6" - valves 6" and smaller than 6" -Pipe and remaining valves, fittings and flanges -Gaskets and bolting -Welding rods		X X X X X		X
INSTRUMENTATION. LABORATORY -Cable tray conduit and support -Control room panels, racks, cabinets and associated instrumentation -All other items	X X		X	
ELECTRICAL -Cable reels, conduit and cable trays -Electrical motors designed for outdoors service -Electrical motors designed for indoors service -Supporting steel, stanchions, saddles, etc... --Lighting equipment -Panel boards, racks cabinets and associated electrical - transformers -U.P.S., batteries -All other materials	X X X X X	X	X X	X
Telecommunication Equipment	X			

	STORAGE IN AIR CONDITIONED PREMISES	STORAGE IN COVERED OR ENCLOSED PREMISES	STORAGE UNDER TARPAULIN	STORAGE OUTDOOR WITHOUT COVERS
STORAGE CODE	xxxx	xxx	xx	x
REFRACTORY LINING -Refractory liquid, mortar, mixes, ceramic fibres Expanded polystyrene, paper adhesive coatings, paints... -Dense fire bricks, steel parts, insulating fire bricks and blocks		X	X X	
INSULATION -Ceramic fibre and calcium silicate material, metal sheeting -Minerals wool blankets, supporting rings, fasteners,		X X		
PAINTS, THINNERS, etc.. -All materials		X (Separate Warehouse)		
CIVIL -Anchor bolts -Reinforcing steel -Cement (in bags), bricks		X	X	X

- The storage code shall be shown on each package with the appropriate symbol

Appendix C

Packing List

HATCH Technip

KONIAMBO NICKEL PROJECT,
NEW CALEDONIA

319000

SUPPLIER - *Fournisseur*

PACKING LIST
Liste de colisage

PL N°

N° PO Chrono	PO	Unit-Unité	Code Exp	N° Order / Ordre	Amd /Avt

Number of Packages *Nombre de colis*	Total Net Weight kg *Poids Net Total* kg	Total Gross Weight .....kg *Poids Brut Total* ..... kg	Total Volume *Volume Total* m^3

Package N° *Colis N°*	Type of Package *Nature du colis*	Unit weight in kg *Poids unitaire en kg*		Measurement (in centimetres) Length x Width x Height *Dimensions (en centimètres) Longueur x Largeur x Hauteur*	Unit volume in m^3 *Volume unitaire en m^3*	ITEM *ITAG N°*	Quantity *Quantités*	Description of Goods *Désignation des marchandises*
		Net *Net*	Gross *Brut*					
To continue – *à reporter*		0	0		0.000			Country of origin/*Pays d' origine*

Appendix D

Packing Note

HATCH Technip		CONSIGNEE - Destinataire		SUPPLIER - Fournisseur	
				Packing list N° Liste de Colisage N°	
REQUISITION N° /Rev N°	P.O. Chrono N°	**PACKING NOTE** ***Bordereau de colis***		Package N° *Colis N°*	
Net Weight *Poids Net* *kg*	Gross Weight *Poids* Brut *kg*	Length *Longueur* *Cm*	Width *Largeur* cm	Height *Hauteur* cm	Volume m^3
ITEM N° TAG N° MR N°	Quantity *Quantité*	Detailed description of the package content *Description détaillée du contenu des colis*			Page .../.....

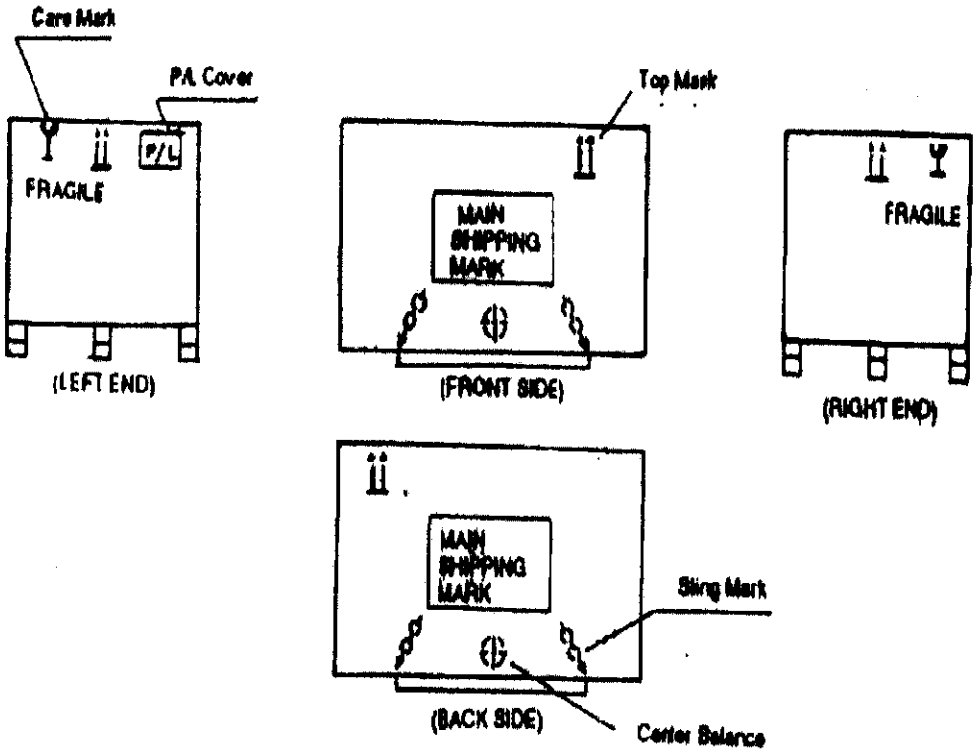
Appendix E

Position of Shipping Mark

Care Mark

Centre of Gravity Mark

POSITION OF SHIPPING MARK – CARE MARK – CENTRE OF GRAVITY MARK

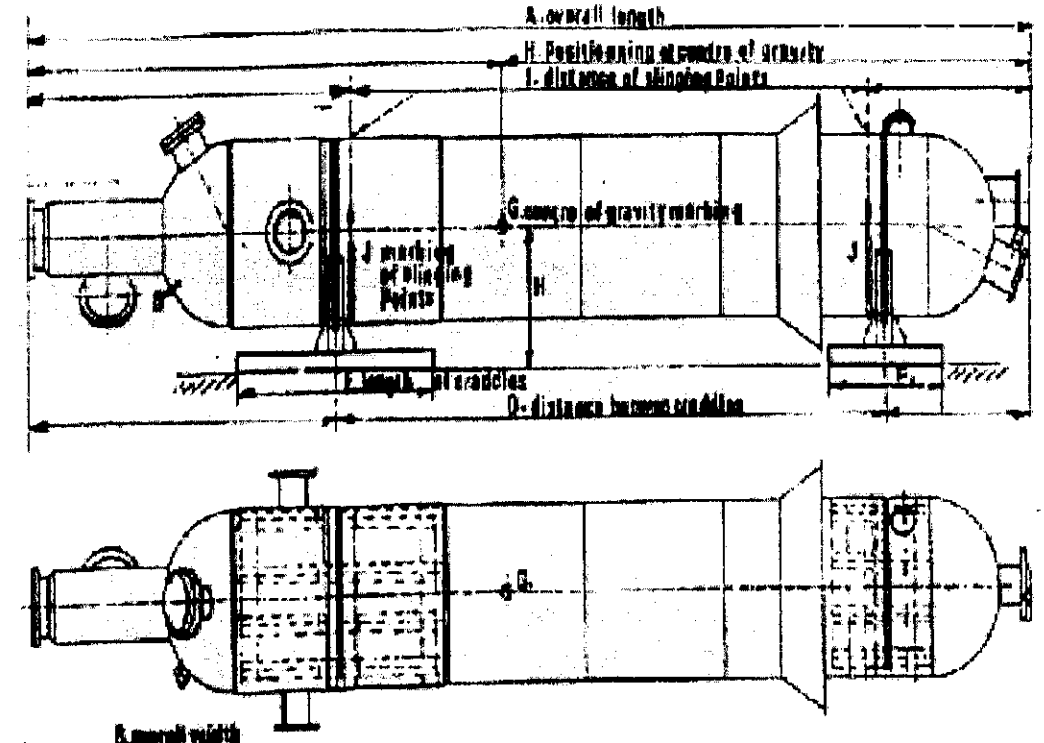


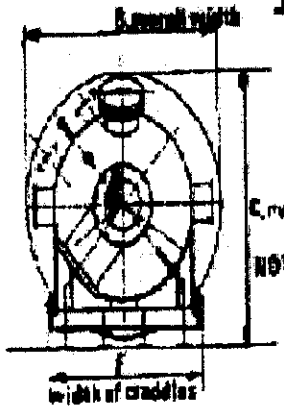
Appendix F

Transportation Drawing

TRANSPORTATION DRAWING

EXAMPLE





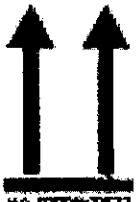
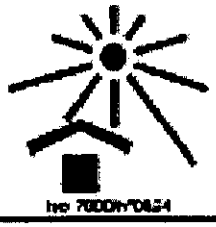
THIS SKECH SHALL BE DRAWN ON A-3 FORMAT

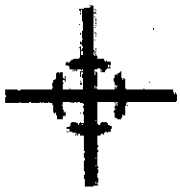
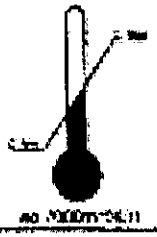
NOTE It is understood that cradles must be built in such a way that they may support transportation contraints including domestic transport - [illegible] on lift off operation - sea transportation - overcarriage transportation up to site

CONTRACT N°	
TRANSPORT DRAWING N°	Rev
EQUIPMENT REF	
NET WEIGHT	
GROSS WEIGHT	

Appendix G

International Standard Graphic Symbols

key	symbol	function
1 fragile handle with care	 iso 7000/n°0621	indicates: a) that the content of the transport packaging is fragile b) that it must be handled with care
2 use no hooks	 iso 7000/n°0622	indicates that hooks may not be used to lift the transport packaging
3 top	 iso 7000/n°0623	indicates correct upright position of transport packaging
4 keep away from heat	 iso 7000/n°0624	indicates that the transport packaging must be kept away from heat
5 keep away from heat and radioactivity	 iso 7000/n°0615	indicates that the content of the packaging may be damaged or made completely unusable by heat or penetrating radiation
6 sling here	 iso 7000/n°0626	shows where slings should be attached to lift the transport packaging

key	symbol	function
7 keep away from moisture		indicates that the transport packaging must be kept in a dry environment
8 centre of gravity		indicates the centre of gravity of the transport packaging
9 do not roll		indicates that the transport packaging must not be rolled
10 no trolley this side		identifies locations on transport packaging where trolleys or trucks must not be placed
11 storage limits		indicates limited storage capability of transport packaging
12 clamp sides		shows where clamps should be placed for handling of transport packaging
13 temperature limits		indicates temperature limits between which transport packaging must be kept

TECHNICAL DATA SHEET FOR ELEVATORS (GOODS ELEVATOR)		DATE	
		ISSUE	
		DEPT	
CUSTOMER: BHEL		PRPD BY	
REF:FBC&HRSG:CI:5312:PANNEX		APPD BY	
SL.NO.	DESCRIPTION	SPECIFICATION	
1.0	Elevator		
1.1	Manufacturer		
1.2	Type & Model No.		
1.3	Car Size		
1.4	Door Size		
1.5	Pay Load in Kgs.		
1.6	Weight of unloaded car in Kgs. (approx.)		
1.7	Rated speed		
1.8	Travel and Landings as per spec. requirements Y/N		
1.9	Design fabrication and testing of elevator confirm to		
1.10	No. of floors		
1.11	Travel		
1.12	Elevator Car		
1.13	Type and material of construction		
1.14	Thickness of sheet steel		
1.15	Fan with grill provided		
	a) Fan size		
	b) Size of ventilation opening		
	c) Fan Power		
1.16	Lighting inside car provided ?		
	a) Type of lighting		
	b) Number and wattage		
	c) Type of fitting for above		
1.17	Isolating cushion between car and car frame provided?		
1.18	Details of isolating cushion		
1.19	Three pin plug with socket		
1.20	Car frame - Materials		
1.21	Material		
1.22	Type of construction		
1.23	Door		
1.24	Type of door		
1.24 A	Landing Door		
1.25	Type of operation		
1.26	Material of construction		
1.27	Door hanger tracks and other accessories provided ?		
1.28	Safety shoes complete with accessories provided ?		
1.29	Safety device for door operation provided as specified?		
1.30	Control and operation		
	(a)Type of control		
	(b)Type of drive		
1.31	Car operating panel		
	(a)Type of construction		
	(b)Push Buttons		
1.32	Car position indicator		
	(a)Type of construction		
	(b)Type of display		
1.33	Car Floor finish		
1.34	Push button station and call registered tell tale lights at each hoistway		
	(a)Type of construction		
	(b)Push Buttons		

TECHNICAL DATA SHEET FOR ELEVATORS (GOODS ELEVATOR)		DATE	
		ISSUE	
		DEPT	
CUSTOMER: BHEL		PRPD BY	
REF:FBC&HRSG:CI:5312:PANNEX		APPD BY	
SL.NO.	DESCRIPTION	SPECIFICATION	
1.35	Apron provided as per IS 14665		
1.36	Emergency Light		
1.37	Emergency exit		
1.38	Terminal buffers		
1.39	Type of buffers		
1.40	Stroke of buffers		
1.41	Number of buffers		
1.42	Location of buffers		
1.43	Load plate supplied		
1.44	Counter weights frame		
1.45	Counter weight fillers		
1.46	Guides for CAR		
1.47	Guides for Counterweight		
1.48	Type of section		
1.49	Material of construction		
1.50	Lubrication particulars		
1.51	Limit switches		
1.52	Number of Limit Switches		
1.53	Location		
1.54	Type		
1.55	Operation		
1.56	Controller		
	(a)Manufacturer		
	(b)Type and model		
1.57	Cubical		
	(a)Construction		
1.58	Reverse phase relay and other protective devices		
1.59	Car, Safety & Governor		
1.60	Safety gear		
	a) Type no. and location		
	b) Stopping distance		
	c) Confirming to IS: 14665		
1.61	Overspeed Governor device		
	a) Type and mode of operation		
	b) Tripping speed		
	c) Location		
	d) Material of construction		
	e) Design confirms to		
1.62	a) Ropes		
	b) Manufacturer		
	c) No. of ropes used		
	d) Type of rope		
	e) Size of rope		
	f) Confirms to code and standard		
	g) Breaking load of one rope		
	I) Design factor of safety		
	j) Hoist rope compensation		
	I) Material of construction of Sheaves and Pulleys		

TECHNICAL DATA SHEET FOR ELEVATORS (GOODS ELEVATOR)		DATE	
		ISSUE	
		DEPT	
CUSTOMER: BHEL		PRPD BY	
REF:FBC&HRSG:CI:5312:PANNEX		APPD BY	
SL.NO.	DESCRIPTION	SPECIFICATION	
1.63	No. of hoistway doors		
1.64	Elevator main Motor		
	(a)Equipment driven by Motor		
	(b)Frame size		
	(c)Manufacturer		
	(d)Type		
	(e)Type of Duty		
	(e1)Motor Duty		
	(e2)Duty Cycle of Motor		
	(f)Applicable standard		
	(g)Motor (Machine) Model		
	(h)KW Rating		
	(i)Voltage phase & Frequency		
	(j)Full load current		
	(k)No load current		
	(l)Rated Torque		
	(m)Direction of rotation		
	(n)Starting current as % of FLC		
	(o)Starting Torque % to full load		
	(p)Pull out Torque		
	(q)Maximum variation in Voltage & Frequency		
	(r)Power factor at Full load		
	(s)Full load Efficiency		
	(t)Type of enclosures		
	(u)Class of Insulation		
	(v)Temperature rise above ambient temperature of 50°C		
	(r)Winding resistance at 20°C		
	(s)Type of Bearing		
	(t)Tropical Protection		
	(u)Method of Starting		
	(v)Stator connection during running		
	(w)Over load capacity		
	(x)Weight of the Motor		
1.65	Door Motor		
	(a)Equipment driven by Motor		
	(b)Manufacturer		
	(c)Type & Model		
	(d)KW Rating		
	(e)Voltage phase & Frequency		
	(f)Full load current		
	(g)Direction of rotation		
	(h)Type of enclosures		
	(i)Weight of the Motor		